

EXHIBIT C – Wind and Environmental Conditions in the Area

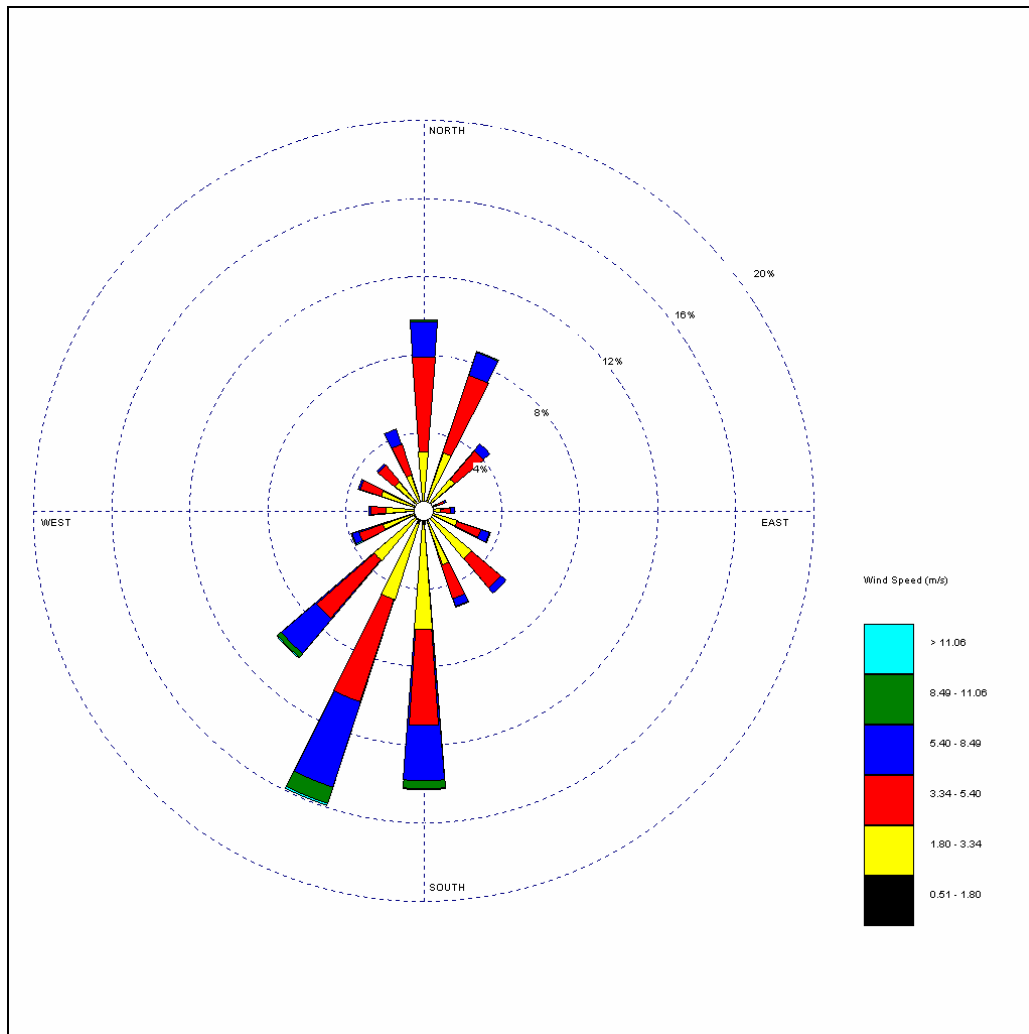


Figure C-1. Wind Rose – Seattle-Tacoma Station No. 24233, January 1, 1989 to December 31, 1992. The wind direction is relative to true north and represents the direction the wind is blowing from.

The wind rose shown in Figure C-1 shows the plot of the distribution of wind speed and wind direction for the four year period between January 1989 and December of 1992. The prevailing winds in the area of Seattle-Tacoma weather station no. 24233 are from the south and south-southeast. It is acknowledged that the atmospheric data for Seattle-Tacoma station may not be fully relevant, however, statistically it may provide sufficient insight. For comparison, the wind rose prepared by Golder Associates for the present facility for the purpose of dispersion modelling is shown in Figure C-2. It is observed that the two wind roses are similar with the only major difference being in the north-north-eastern direction. It is therefore concluded that the data obtained from the Seattle-Tacoma weather station can be used for statistical assessment of the noise impact.

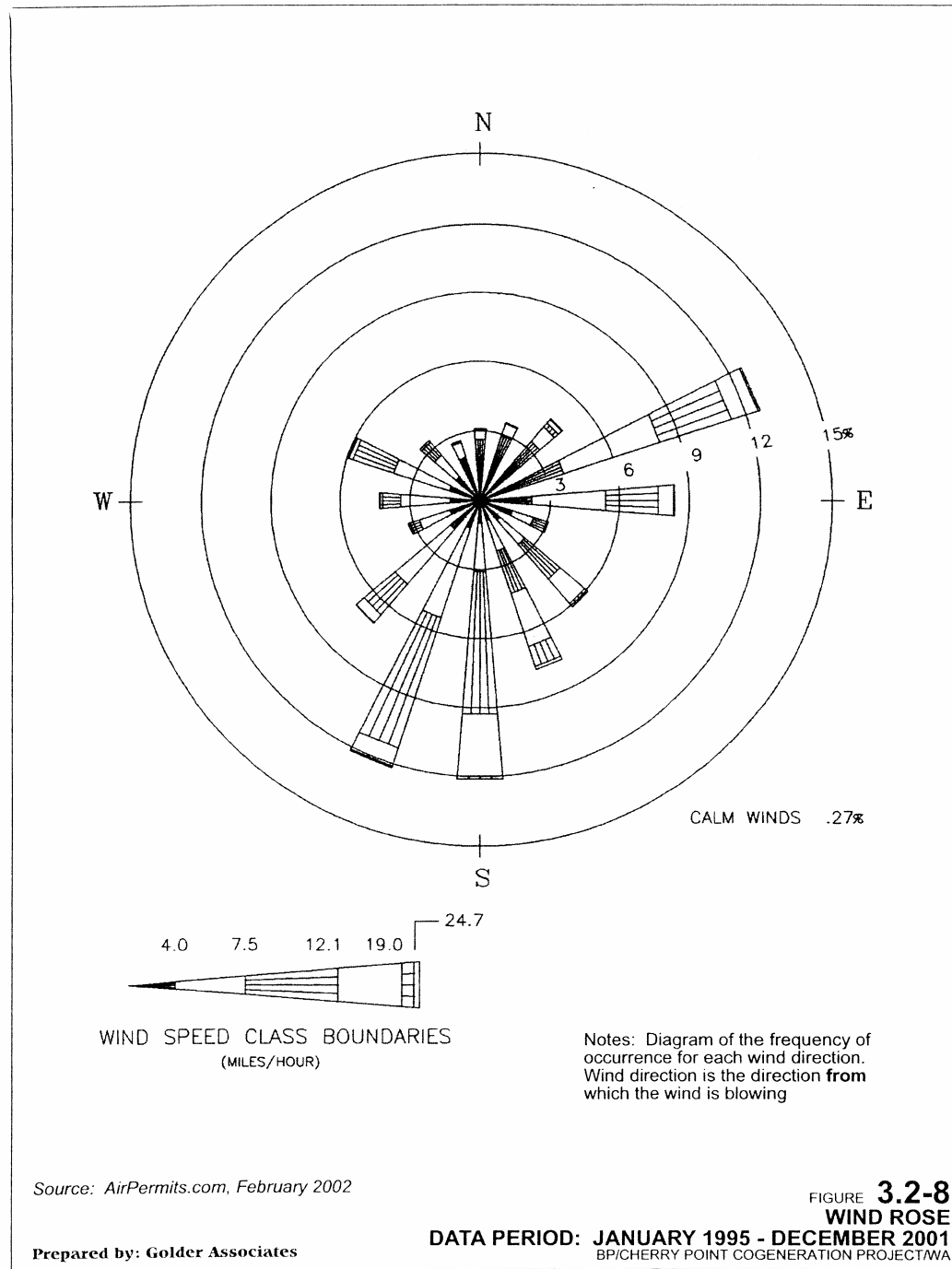


Figure C-2. Wind Rose for the Area Around the Proposed site of the Cherry Point Cogeneration Facility. The diagram was taken from Part II, Section 3.2, "Air Quality".

Figure C-3, below, shows the wind rose for periods from March 1 to July 31 for the four years between 1989 and 1992. This time frame is of particular importance to nearby heron colonies as it coincides with the staging and nesting times. It has been considered that during this time the herons may be particularly sensitive to disturbances.

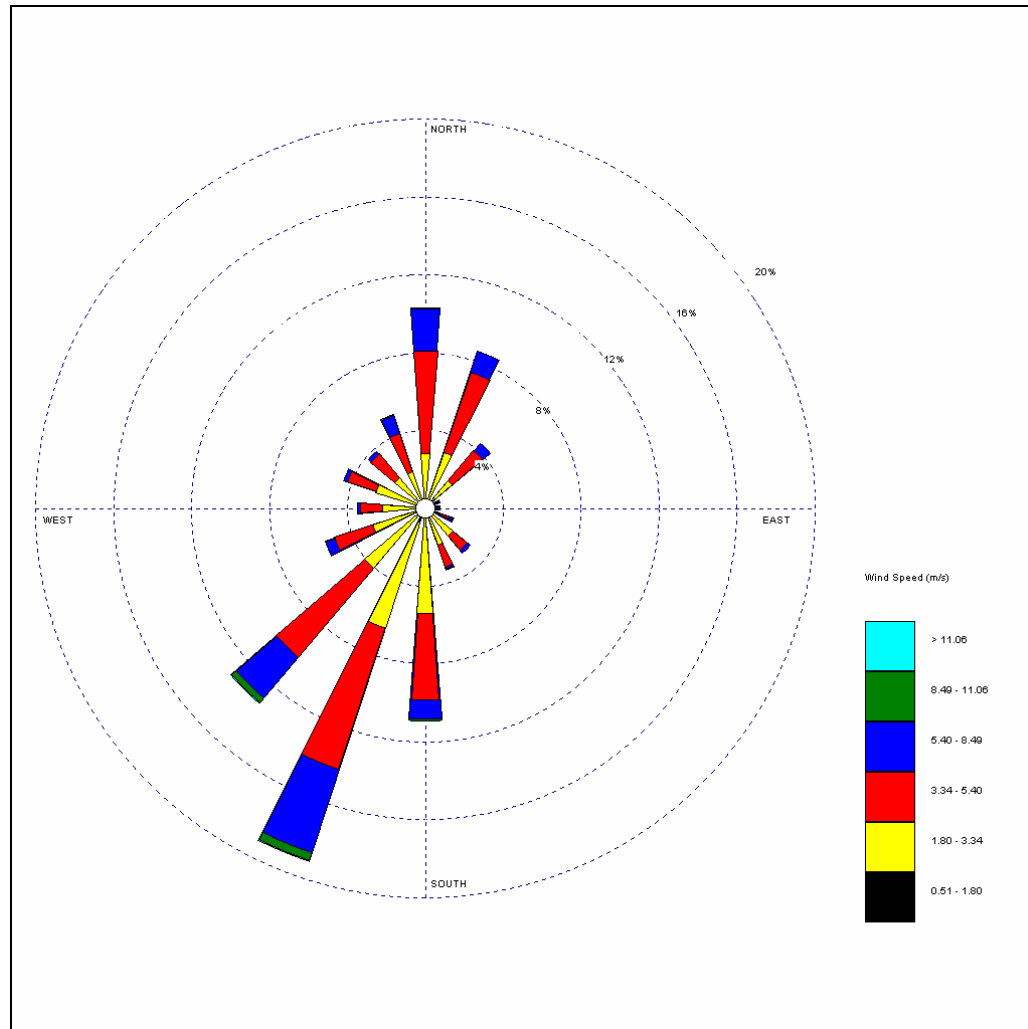


Figure C-3. Wind Rose – Seattle-Tacoma Station No. 24233, March 1 to July 31 data, 1989 to 1992. The wind direction is relative to true north and represents the direction the wind is blowing from.

The wind rose of Figure C-3 shows the south and south-southwest wind direction is more prevalent between March and July than the annual average. Northwest Air Pollution Authority has confirmed that an increase in southerly winds between March and July also takes place in the Blaine – Lynden – Bellingham area. Consequently, it was concluded that statistically, the data for Seattle-Tacoma area may be acceptable for the purpose of identifying suitable and representative conditions for the area.

Refraction of sound resulting from the wind velocity and atmospheric temperature gradient has a profound effect of the propagation of sound. Correspondingly, identification of suitable,

or what is sometimes referred to as representative, atmospheric conditions is necessary for proper noise impact assessment.

For the area around the proposed site of the cogeneration facility, the most sensitive area was identified as being to the north of the proposed site. This includes the residential area along Blaine Road north of Terrell Creek, the residential area along the Bay Road, and the wetlands north of Grandview Road, which also represent the staging and feeding area for the nearby heron colony.

In regard to noise impact assessment, the nighttime hours are of primary interest, particularly when considering stationary facilities. The reason for this is that during nighttime hours the background levels are generally lower than those during the daytime periods and thus the effect of the facility on the acoustic environment is stronger. Also, stable atmospheric conditions (corresponding to inversion) are possible during nighttime hours. These tend to enhance the propagation of sound and typically result in higher facility noise contribution at the points of reception. Correspondingly, the noise impact from a stationary facility is in general much greater during the nighttime hours than daytime hours.

The review of the obtained meteorological data for nighttime hours only, assuming again that statistically this data is valid for the general area under this review, yielded the following information:

- Annually, on average, during nighttime hours, atmospheric stability class E or greater existed 65% of the time.
- Annually, on average, during nighttime hours, atmospheric stability class E or greater in combination with southerly wind at speeds between 0.5 and 11 mph existed 21% of the time.
- Annually, on average, during nighttime hours, atmospheric stability class E or greater in combination with southerly wind at speeds between 3 and 11 mph existed 18 % of the time.
- Annually, on average, during nighttime hours, atmospheric stability class F (strong inversion) or greater in combination with southerly wind at speeds between 0.5 and 11 mph existed 11% of the time.
- During the months of March through to July, on average, during nighttime hours, atmospheric stability class E or greater in combination with southerly wind at speeds between 0.5 and 11 mph existed 20% of the, while stability class F in combination southerly winds existed 10% of the time.

Atmospheric conditions have a dominant effect on propagation of sound. Thermal inversion (positive lapse rate, stable atmosphere), for instance, causes downward banding of sound waves, which tends to increase the sound levels at far-field receivers. In contrast, negative lapse rate (unstable atmosphere), which takes place during sunny or partly cloudy days, tends to bend the sound waves upwards. During such conditions at some distance away, the facility will become completely inaudible as the observer will be in the acoustic shadow. The presence of wind has a very similar effect. Downwind from the source, the noise levels will be higher than those upwind. At sufficient distances upwind, the facility will become inaudible. This explains why the same facility may appear loud one time and be completely

inaudible another time at the same location. Atmospheric stability classes A, B, C represent negative lapse rate. The stability classes E, F, and G correspond to positive lapse rates or thermal inversion. Atmospheric stability class D is considered neutral and occurs typically during overcast days and nights. Nighttime periods will be associated typically with stability classes ranging from D during overcast skies to F or G during clear skies. The daytime periods will typically exhibit stability classes A to D. For this reason, noise impact during the nighttime periods will, in general, be higher than during daytime, all else being equal.

The atmospheric conditions, which are conducive to sound propagation and result in increased sound levels at far-field receivers, are often referred to as adverse conditions. As the strength of the thermal inversion increases, the conditions are said to become more adverse or resulting in higher noise levels at the receivers. The most adverse conditions occur during strong inversion and at downwind location. Frequently, it is not necessary to consider the worst-case or the most adverse atmospheric conditions to assess the noise impact. However, in general, considering atmospherically neutral conditions is not sufficient.

The review of the weather data suggested that a considerable percentage of nighttime hours exhibited very adverse atmospheric conditions with respect to the noise impact of the surrounding area particularly to the north of the site. Correspondingly, it has been concluded that noise impact assessment for the area should include propagation analysis under the following meteorological conditions:

- atmospheric stability class: F
- wind: 6 to 7 mph (3 m/s) towards receiver

The above conditions cover 90% of all atmospheric occurrences with the respect to the noise impact.